**Physical-mechanical characteristics of cement-bonded kenaf bast fibres composite boards with different densities**


ABSTRACT

This study was carried out to explore the potential of kenaf bast fibres (KBFs) for production of cement-bonded kenaf composite boards (CBKCBs). More than 70% of the KBFs were of size >3.35 mm and length of 31±0.4 mm, therefore, they were used for CBKCBs production. The CBKCBs with the dimensions of 450 × 450 × 12 mm were produced using cement (C): KBF with proportion of (2:1) and different board densities (BD) namely 1100, 1300 and 1500 kg/m3The CBKCBs were first cured in a tank saturated with moisture for 7days, and then kept at room temperature for 21 days. Mechanical and physical properties of the CBKCBs were characterized with regards to their modulus of rupture (MOR), modulus of elasticity (MOE), internal bond (IB), water absorption (WA), and thickness swelling (TS). Results of the tested CBKCBs revealed that the MOR increased while the MOE decreased due to uniform distribution of KBFs. It was found that loading of KBFs has a negative influence on the internal bond (IB) of the CBKCBs; the IB was reduced as KBFs tend to balling and making unmixed aggregates with the cement. These results showed that the CBKCB is a promising construction material that could potentially be used in different structural applications due to their good mechanical characteristics.



**Keyword:** Board density; Dimensional stability; Kenaf bast fibres; Mechanical properties